

In order to facilitate document reviews and to establish continuity among the designers, the following outline and an example of the “List of Existing Features Requiring Design Exceptions” format for an Interstate project has been prepared. Please note the order in which the mainline, crossroad, ramps and design exceptions are listed. The example shows the standard sentences used to introduce each design exception and a description of the design exception.

Please list the mainline roadways, crossroad, and ramps in the following order. The “ramp designation: will be ramp number shown on the Control-of-Access photograph of the traffic interchange.

#### MAINLINE

##### ROUTE NB (or EB)

Design Exceptions

##### ROUTE SB (or WB)

Design Exceptions

#### NAME TI

##### CROSSROAD NAME

Design Exceptions

RAMP DESIGNATIONS use the NB (or EB) exit ramp

Design Exceptions

RAMP DESIGNATIONS use the NB (or EB) entrance ramp

Design Exceptions

RAMP DESIGNATIONS use the SB (or WB) entrance ramp

Design Exceptions

Please list the applicable design exceptions in the following order.

1. Travel lane/ Traveled way/ Ramp pavement width
2. Shoulder width
3. Grade
4. Cross slope
5. Post Construction Vertical Clearance
6. Bridge width
7. Bridge rail geometry/structure
8. Bridge structural capacity
9. Vertical curve stopping sight distance
10. Degree of curvature exceeds maximum
11. Superelevation less than minimum
12. Superelevation exceeds maximum

NOTE: The information shown on the following asterisk table is use to demarcate data on the "Summary of AASHTO Controlling Design Criteria" sheets (Wang sheets).

ASTERISK TABLE

- \* - Design Exception Required.
- \*\* - Design Exception will not be requested because ...
- \*\*\* - Not Calculated because the ...
- \*\*\*\* - Only used for special circumstances, consult with your supervisor before using.

PROJECT 40 CN 152 H3262 01 C

-40-3(77)A

WELCH RD TI - DEVIL DOG TI

ASH FORK - FLAGSTAFF HIGHWAY

I-40

AASHTO CONTROLLING DESIGN CRITERIA REPORT

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ARIZONA DEPARTMENT OF TRANSPORTATION

INTERMODAL TRANSPORTATION DIVISION

ROADWAY ENGINEERING GROUP

ROADWAY PREDESIGN SECTION

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## **LIST OF EXISTING FEATURES REQUIRING DESIGN EXCEPTIONS**

The following is a list of the existing design features requiring design exceptions:

(Note: The analysis of all design features except vertical curve stopping distance is based upon the 1990 Green Book. The analysis of vertical curve stopping distance is based upon the 2001 Green Book where roadway grade is used to calculate the stopping sight distance.)

### **I-40 EB**

The existing shoulder width is less than the recommended 4' (inside) as follows:

1. MP 150.05 to MP 160.00 - 1' less than recommended.

The existing grade exceeds the recommended maximum of 3% as follows:

1. MP 154.99 to MP 155.83 - 0.997% greater than the maximum.

The post construction vertical clearance is less than the recommended 16'-0" as follows:

1. MP 157.00 Palo Parado TI UP (#3421) - 0'-2" less than recommended.
2. MP 159.00 Deadman UP GS (#3444) - 0'-2" less than recommended.

The existing bridge width is less than the recommended 37.5' as follows:

1. MP 151.03 Crater Wash Bridge (#2123) - 1.5' less than recommended.
2. MP 153.50 Ashfork RR OP (#3241) - 2.0' less than recommended.

The geometry and/or structure criteria of the bridge rail does not meet AASHTO recommendations as follows:

1. MP 151.03 Crater Wash Bridge (#2123) - bridge rail and 18" curb.
2. MP 153.50 Ashfork RR OP (#3241) - bridge rail.

The bridge structural capacity is less than the recommended HS 20 as follows:

1. MP 151.03 Crater Wash Bridge (#2123) - HS 15.

The vertical curve stopping sight distance is less than the recommended 850 as follows:

1. Beginning MP 152.33 (VPI Sta 997+00.00) - 458 ft less than recommended.
2. Beginning MP 154.02 (VPI Sta 1050+50.00) - 325 ft less than recommended.
3. Beginning MP 156.23 (VPI Sta 1690+50.00) - 485 ft less than recommended.

The existing degree of curvature exceeds the recommended maximum of 4° 30" as follows:

1. Beginning MP 151.00 (HPI Sta 980+34.10) - 0° 30.00' greater than the maximum.
2. Beginning MP 153.00 (HPI Sta 990+50.00) - 1° 30.00" greater than the maximum.

## **I-40 EB - Cont.**

The superelevation rate is less than the recommended minimum as follows:

- 1.Beginning MP 156.50(HPI STA 1097+67.30) - .006 ft/ft less than the minimum.
- 2.Beginning MP 157.00(HPI STA 1109+21.10) - .021 ft/ft less than the minimum.

The superelevation rate exceeds the recommended maximum of 0.10 ft/ft on the following horizontal curves:

- 1.Beginning MP 151.00(HPI STA 980+34.10) - .008 ft/ft greater than the maximum.
- 2.Beginning MP 154.30(HPI STA 1059+09.80) - .021 ft/ft greater than the maximum.

## **I-40 WB**

The existing grade exceeds the recommended maximum of 3% as follows:

1. MP 154.99 to MP 155.83 - 0.997% greater than the maximum.

The bridge structural capacity is less than the recommended HS 20 as follows:

1. MP 151.03 Crater Wash Bridge (#2124) - HS 15.

The vertical curve stopping sight distance is less than the recommended 850' as follows:

1. Beginning MP 152.44 (VPI STA 997+00.00) - 458' less than recommended.
2. Beginning MP 154.14 (VPI STA 1050+50.00) - 325' less than recommended.
3. Beginning MP 156.34 (VPI STA 1690+50.00) - 485' less than recommended.

The superelevation rate is less than the recommended minimum on the following horizontal curves:

- 1.Beginning MP 153.21 (HPI STA 990+50.00) - .020 ft/ft less than the minimum.
- 2.Beginning MP 156.80 (HPI STA 1097+67.30) - .006 ft/ft less than the minimum.
- 3.Beginning MP 157.50 (HPI STA 1109+21.10) - .021 ft/ft less than the minimum.

## **Palo Parado TI**

### **Crossroad**

The existing shoulder width is less than the recommended 6' as follows:

1. STA 575+34.12 to STA 582+00.23 - 2' less than recommended.
2. STA 582+00.23 to STA 583+01.24 - 1' less than recommended.

The superelevation rate exceeds the recommended maximum of .10 ft/ft on the following horizontal curves:

1. HPI STA 512+48.54 - .01 ft/ft greater than the maximum.
2. HPI STA 517+51.24 - .01 ft/ft greater than the maximum.
3. HPI STA 526+11.65 - .01 ft/ft greater than the maximum.

### **Ramp 157A**

The ramp pavement width is less than the recommended 21' as follows:

1. STA 504+27.56 to STA 506+23.04 - 1' less than recommended.

The existing degree of curvature exceeds the recommended maximum of 5° 45' as follows:

1. HPI STA 507+25.89 - 0° 15' less than the maximum.

### **Ramp 157F**

The vertical curve stopping sight distance is less than the recommended 600' as follows:

1. VPI STA 597+00.00 - 103' less than recommended.
2. VPI STA 650+50.00 - 49' less than recommended.
3. VPI STA 691+50.00 - 104' m less than recommended.

The superelevation rate is less than the recommended minimum on the following horizontal curves:

1. HPI STA 580+24.11 - .031 ft/ft less than the minimum.

### **Ramp 157D**

The ramp pavement width is less than the recommended 21' as follows:

1. STA 514+27.56 to STA 516+23.04 - 1' less than recommended.

### **Ramp 157J**

The vertical curve stopping sight distance is less than the recommended 475' as follows:

1. VPI STA 509+75.0 - 201' less than recommended.

